

Teacher Resource Pack

Key
Stages
3 & 4

History • Drama • Art • Geography • Science



CRICH
TRAMWAY
VILLAGE

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1. Introduction

Crich Tramway Village Educational Aims

Crich Tramway Village aims to provide enjoyable active learning opportunities that inspire and engage students. We work with our collections to engage learners in critical, analytical and investigative thinking, to gain insight into social, cultural, historical and technological changes in the 19th and 20th century.

About This Pack

Included in this pack are a broad range of suggested ideas and activities to support classroom learning and self-led onsite visits. The activities are designed for Key Stage Three and Key Stage Four pupils studying History, Art, Geography, Science and Performing Arts. All learning plans and activities have been carefully constructed to link as closely as possible with the National Curriculum and examination syllabus requirements.

The activities could be delivered separately or in any combination to maximise a full day site visit. We recommend that students work in groups of five to seven students. We have purposely designed opportunities for hands-on engagement with real and replica objects to construct possibilities for pupils to develop choice over the order in which they look at objects and to enhance observation, investigative, communication and social skills. Information is available onsite for each activity so that pupils can be guided by specialist or non specialist helpers.

The Learning Offer

During a learning visit to Crich Tramway Village we offer:

- An optional free five minute welcome talk
- Learning galleries, exhibition spaces, outdoor nature areas and an opportunity to experience a reconstructed historical street with working trams
- Activities, trails, investigations and handling objects
- Images and archive materials to support historical enquiry
- A dedicated education space for schools to work with handling objects and learn about the lives of people in the 19th and 20th centuries.

Contact

For further information about visiting Crich Tramway Village please contact our Learning Department education@tramway.co.uk or telephone 01773 854328/4339.

2. Exhibition Galleries and Learning Spaces



1860s to 1960s

The Century of Trams exhibition was launched in the Great Exhibition Hall in 2010. The exhibition offers schools an intriguing journey through a hundred years of technological and social change. The collection includes horse trams, steam trams and electric trams displayed in decades with supporting information, interactive diagrams and banners that reference historical events and themes. To help students travel back in time they are invited to explore real objects and receive an optional introductory welcome on an old working tram in this exhibition space.

Stephenson Discovery Centre

Officially opened in summer 2011, the Stephenson Discovery Centre is a vibrant interactive space. Pupils are encouraged to answer and ask questions to learn about George Stephenson, the changes to transportation in Britain, overcrowding in expanding towns and cities and the effects of Industrialisation. Pupils can also find out more about the history of the site, quarrying and working roles in the 19th century.

The Stephenson building was originally developed in the 1800s. It was used as a smithy and wagon works for George Stephenson's one metre gauge mineral railway to transport limestone from Crich Cliff Quarry to kilns at Ambergate. The building has been fully restored as an exhibition space on the first floor and a brand new education facility on the ground floor available to schools for workshops, talks, handling activities and film showings.

Workshop Viewing Gallery

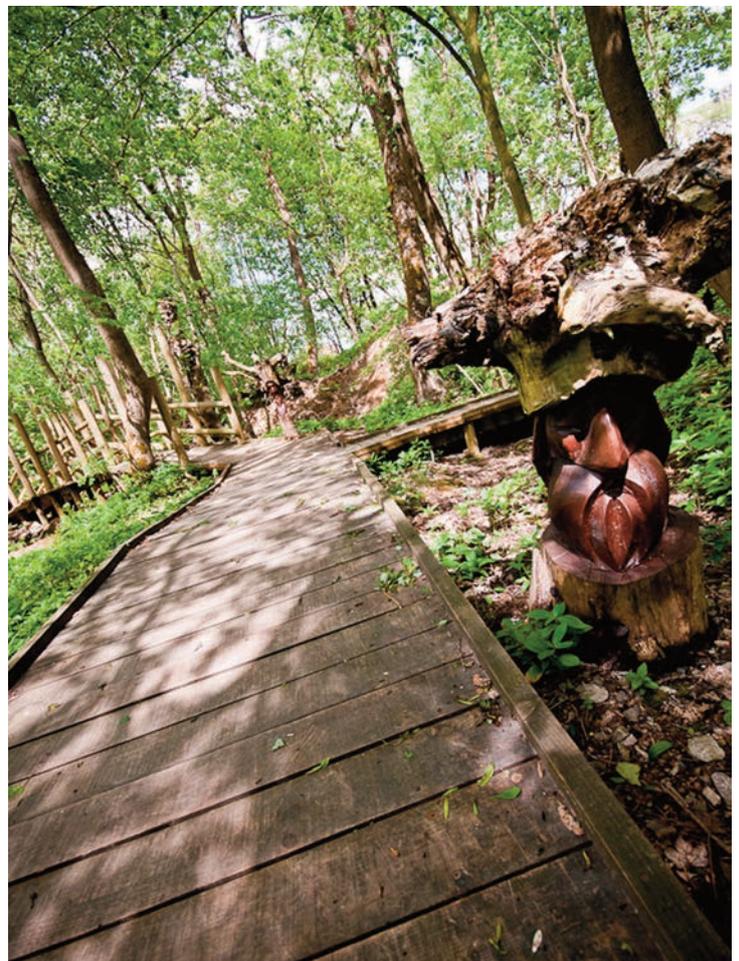
Connected to the Stephenson Discovery Centre via a glass bridge link, the Workshop Viewing Gallery gives visitors the chance to watch the museum's skilled workshop staff restoring trams and keeping the operating fleet in excellent working condition.

The Woodland Walk

The nature area at the top of the site offers a range of learning opportunities to support Geography, Science and Art Curriculums.

The Assembly Rooms

This exhibition covers developments in tramways from 1945 to the present day, and follows the revival of trams in some of our major cities. It shows the impact of the Second World War and the lack of investment in tramway infrastructure. Environmental and sustainability issues are explored along with the development of second generation tramcars and the renaissance of tramways in the United Kingdom.



3. Curriculum Links

Art and Design

- Lens and light based media: still, moving images, traditional methods, film, animation, new media
- Graphic; Illustration, advertising, packaging and multimedia, how graphics communicate, logo, signs, symbols, advertising
- Multimedia: web design and illustration
- Critical and Contextual Studies: natural world, landscapes, design, moving parts, critical analysis of a museum visit
- 2D and 3D, form, base, volume
- Study artefacts from contemporary, historical, personal and cultural contexts. Themes: Journeys, Man and Machine, Scale and Pattern, Natural and Man Made

Languages

- Interpret text panels in different languages
- Research different countries and their trams and write an information leaflet
- Describe Crich Tramway Village to a tourist in their first language including opening times, directions, things to do and see

Science

- Forces: motion, braking, friction, resultant forces
- Electricity: static electricity, resistance, circuits
- Energy: stored, transferred
- Materials: conductors, insulators

Trams KS3 & 4 Curricular Links

Geography

- Rocks landscapes and processing: quarrying, types of rock
- Economic change, characteristics of industry
- Tourism and rural environment, modes of transport and impact on environment, mapping skills

History

- Cause and consequence
- Change and continuity
- How has British society changed?
- Position of women, women at work
- Historical Figures: George Stephenson
- Industrialisation and changes in technology: trams, quarries, railway at Crich
- British History: Exploring the ways in which lives and attitudes have changed over time, industrial trade, inventions, World War 1
- Living and Working in the Past

Performing Arts and English

- Creative Writing: writing for moving images, narrative, writing from personal experience,
- Spoken language: study social change in technology, writing non-fiction text to advise and inform. Literature: Poetry and prose post 1914
- Play with language, stories, diaries, minutes, accounts, information leaflets, advertisements, literature, poetry and drama from different times.
- Performance: use improvisations skills, devise unscripted pieces, evaluate own and others work, create characters and consider historical, cultural and social influences

4. Resources

Key Stage 3 and 4 Education Materials

The resources shown below support the history, art, drama, science, geography curriculums. Ways of using these resources are outlined in each subject section under Activity Descriptions.

Resources to support onsite learning

Handling Objects

Film & Audio

Written Materials

Image Pack

Linked Teaching

Resources to Support Classroom Learning

Films & audio

- Audio of Burton Tram Accident
- Mitchell and Kenyon Electric Edwardians
- Golden Age of Trams, BBC Timeshift online
- Alan Bennet Tram Rides, Timeshift

Images & Written Material

- Crich online historical photographic archive
- Lillian Parker Information
- Tram story and poem

Web Links

- Tramway Archive
<http://ntm.adlibhosting.com>
- BBC 4 Timeshift
<http://www.bbc.co.uk/programmes/p00m7qkn>
- About Crich
<http://www.crichweb.com/site/>
- E Books:
Tickets Please, DH Lawrence



5. Description of Onsite Education Resources

The Suitcase

The suitcase resource includes real and replica objects, newspaper cuttings, advertisements, letters and extracts from reports, journals and books. Students are encouraged to explore different sources and accounts to build an understanding of women and work during World War One including the changing role of women, perceptions and attitudes. In Art, English and Performing Arts the objects and text are useful sources to explore art historical links, literature and drama.

Punishment Record Book

How were employees managed during the early 20th century? What were the consequences of not following the rules? This resource contains extracts from the L.U.T misconduct record book. It includes real accounts of employee behaviour and how this was managed during the early 20th century. Suitable for Performing Arts and History.

The Newspaper Cuttings

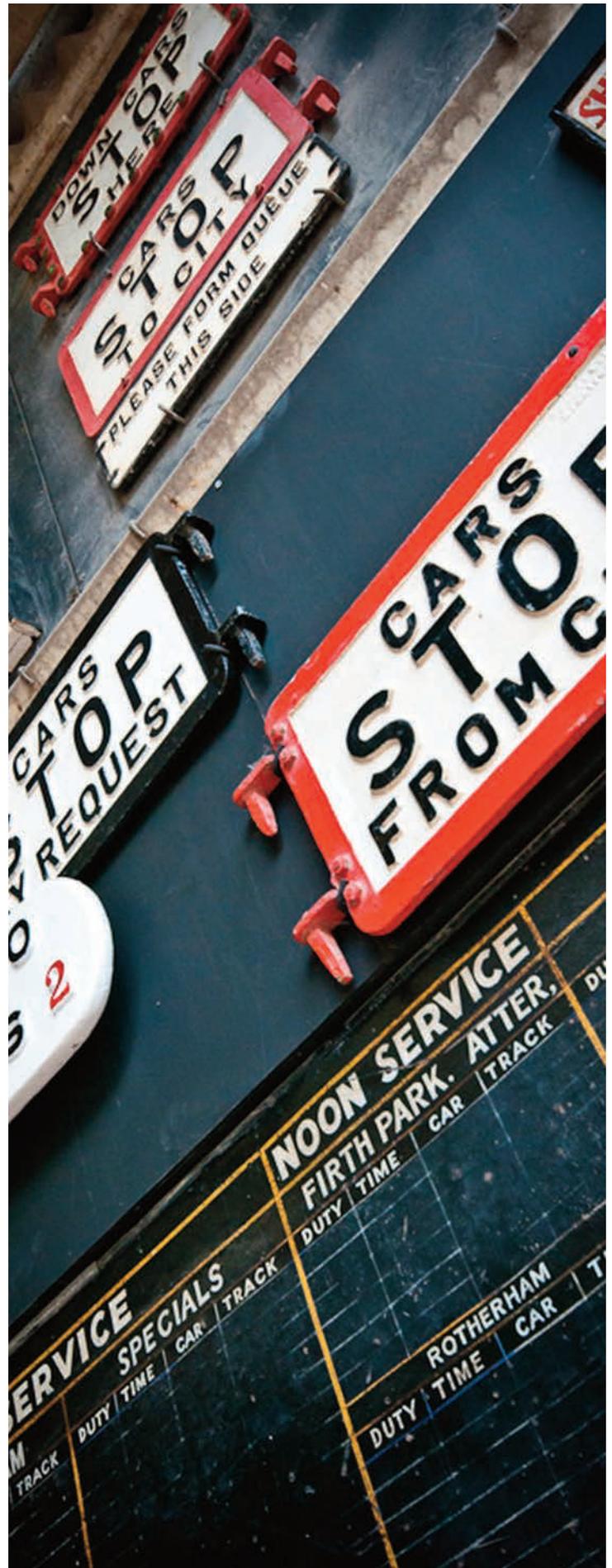
Newspaper cuttings included in the onsite resource packs are taken from the Birmingham Daily Mail and London Daily Mail between the years of 1915 and 1918. The articles reflect on the recruitment and work of conductresses and include tram passenger comments.

The Image Pack

The Image Pack could be used to prompt discussion on similarities and differences between today and the past, the use of real and replica objects and the authenticity of sources. This pack could also be used to focus students observation skills during a tram ride.

Oral History Extracts

Accounts are available from the view point of Tram Conductresses Mrs Seal, Mrs Rose Jones and Nan Vernal ranging from 1914 to 1950s.



Activities

History • Drama • Art • Geography • Science



6. History Activities

Learning Aims

To use the Crich Tramway site and its context to develop skills in historical enquiry, using primary evidence and communicating about the past.

Objectives

- To develop understanding at personal, local, national and international levels
- To ask and answer questions about the present by engaging with the past
- To develop a chronological overview
- To use historical evidence to identify and analyse different interpretations of the past



Key Themes

- The changing roles of women 1900 - 1930
- Working and living in the past
- Crime and punishment
- Significant events
- Transport and technology

Key Questions

- How did transport change during the industrialisation of Britain?
- What can we find out about attitudes to women during this time?
- Why were women working on trams in 1910s?
- What impacts did WWI have on society's attitudes towards the role of women?
- How was transport affected during WWI?
- Who were the key historical figures that contributed to changes in transport and technology?
- What were the key discoveries / inventions that have shaped public transport (then and now)?

Curriculum & Examination Specification Links

- World War I
- World War II
- British Depth Study 1890-1918
- How was British Society Changed 1890-1918
- Working and living conditions of the poor
- Social, political and legal position of women in 1810s
- Arguments for and against female suffrage
- How did women contribute to the war effort?
- Crime and punishment in industrial Britain
- Britain 1815 - 1851
- How were the living and working conditions of the urban working classes improved during this period?
- How important were the railways?
- Study of a historical site and its context

6.1 History Activities

Timeline of events linked to suggested activities

1750 - 1850	Industrial revolution
1860s - 1960s	Lifetime of the trams
1909	Outrage! An Edwardian Tragedy
1912	Suffragettes (UK)
1814-18	World War I (Women at work)
1919	Burton tram crash

Classroom Preparation Activities

- Use the archive resources and online links to prepare students for a visit to Crich Tramway Village or as a consolidation activity
- How have women’s roles changed over time?
- How did the suffragette movement evolve and what happened to it during the war?
- How have attitudes towards women changed? Why did it take until 1918 for women to get the vote?
- How is transport relevant to social, political and economic development?
- When did Watt invent the steam engine, when was electricity discovered and utilised?
- When did canals, railways and trams first appear in local cities (e.g. Derby)?

Classroom Resources

- Electric Edwardians
- Crich Tramway Village Online Archive: <http://ntm.adlibhosting.com>
- Students can search photographs, postcards and other archive images. Try search words that are names of places and streets, e.g. Market Street or dates e.g. 1902

Site based activities

- The activities are flexible enough to accommodate a short or a full-day site visit
- We suggest that a class of 30 students could be organized into groups of 5 – 7 students
- The suggested activities can be delivered in any order
- The activities are designed to last approximately 20 minutes with opportunities for hands-on engagement and discovery
- Some activities could be extended in time to discuss ideas and suggestions in more depth
- Information is provided on site for each activity so that students can be guided by either specialist or non-specialist adult helpers



6.2 Summary of History Activities

Theme	Location	Activity	Resource	Skills Focus
The Changing Roles of Women 1900-1930	Learning Centre	The Suitcase Object Handling Who? What? Why? Investigate the case	The Suitcase Handling Box, Objects, Photographs, Journals, letters, Images, Postcards	Visual Interpretation Using primary and secondary sources to ask and answer questions
Crime and Punishment	Learning Centre	Source Analysis Tram Etiquette Rules, Punishment, Work Conditions Tottenham Outrage	The Punishment Record Book, rules and regulations of work, Tottenham Outrage Book	Using primary and secondary sources to ask and answer questions
Working and Living in the Past	Tramway Village	Compare and Contrast Decades Class of Transport: Workers Trams	Large format images and discussion points - Posters and Postcards - Photographs	Compare and contrast
Industrialisation Transport and Social Change	Stephenson Discovery Centre	Quiz: How has transport contributed to social and economic development?	Stephenson Discovery Centre Information Panels and Interactive Questions	Use secondary sources to ask and answer questions
Historical Events, Political and Social Change 1860 - 1960	Great Exhibition Hall	Journey Through Time: Create a Timeline	Photographs, Trams and interpretation panels, transcript of events	Understanding an event / creating a timeline of events Evaluate different interpretations
	Classroom Activity	Investigate Burton Tram Accident	Newspaper, poem, book and précis of story	How events are reported, interpretations of events
Transport and technology	Tram	Tram ride and discussion	Discussion points Journey stories	Chronological understanding

6.3 Activity Descriptions

1. The Changing Role of Women

1900 - 1930

Learning Centre

Suitcase Activity

This activity has been designed to encourage students to investigate, analyse and explore objects they find in a suitcase. They will use their knowledge, questioning and investigation skills to answer the prompt questions. Students will have an opportunity to find out about ordinary working people, two tram conductresses Mrs Seal and Mrs Jones, their life and work.

Scenario

Some luggage has been found on a tram. Students are asked to look inside the case to work out who the property may have belonged to, when it may have been lost and what information they can find out from the objects. Who could have owned these objects? What role would this person have been doing? Why? What responsibilities might they have had in this role? What time/period are the objects from?

Contents

The Suitcase contains:

- Conductors uniforms (Jackets and Hats)
- Badges and buttons
- Tickets
- Money bag
- Overhead wire
- Wheel from the end of a trolley pole
- Three packs with information about women and work

Pack A

This pack encourages students to consider changes in working society. Contents include:

- A leaflet advertising work opportunities for men and women during WW1
- Newspaper articles from 1915 on women conductors being employed on Trams

Pack B

This pack explores attitudes to women, in their working roles. Viewpoints are given from public and employer perspectives. Content includes:

- Photograph of Sheffield Women Tram Drivers
- Photograph of Women Tram Conductors
- Letter from a Glasgow Driver referencing working in WW1
- The electric and tramway railway journal 1916, March 5th Pros and cons of women working as conductors, the Attitudes of General Managers 1915
- Quite At Home with Soap, newspaper cutting, Birmingham Daily Mail, 1915
- Tramway and Railway World, Vol 42, Women Drivers by Archibald Robertson, July 1917
- Advertisement for tram workers uniforms, early 20th century
- Extracts from the Oral History Archive

Pack C

- Insight into passenger comments, and workers pay conditions and attitudes at the end of WW1
- 'Girl Conductors Strike' newspaper article 1918
- The War Cabinet Committee, December 1918 Statement
- Hat Pins, Lighting Restrictions and A Dirty Habit Newspaper Cuttings 1915, BDM
- Extract of an account given by a conductress working in London during WW1

The History File

The Oral History Files are copies of archive documents, interviews and accounts by former tram company employees. These could be analysed to further understand the roles and life of an employee who might have worked with or owned some of the items in the case. Extracts of these interviews been included in the packs to help students understand the lives of people during the early 20th century.

6.4 Activity Descriptions

The Suitcase Students Activity Questions

Questions about the objects and documents are provided in the suitcase. Students are invited to answer the questions through discussion and/or written responses.

Student Questions

Pack A:

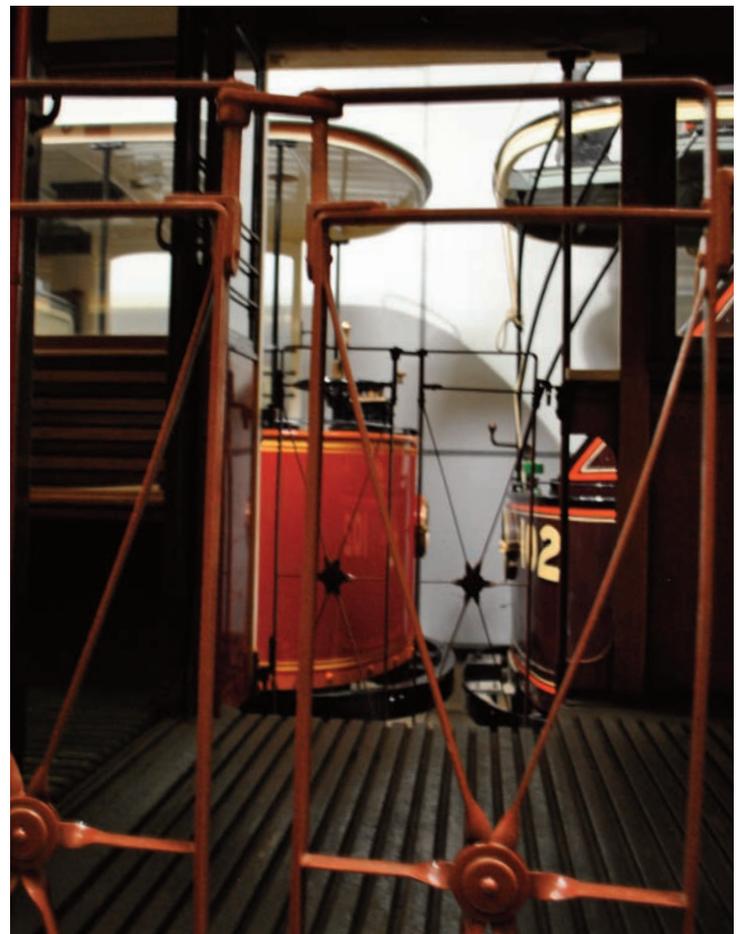
- What are the dates of these artefacts?
- What is the leaflet for?
- Who commissioned the leaflet and why?
- What does the leaflet tell us about work opportunities and the social and economic changes occurring at this time?

Pack B

- Find out about the roles of tram company female employees by analysing the items in the box
- What were the attitudes of employers towards women?
- How might these changes in the working roles of women have contributed towards a change in attitude and the women over 30 getting the right to vote in 1918? Why did it take so long for women to get the vote?
- How were women seen to be more or less reliable tram workers? What do you think the reasons were for this?

Pack C

- Look at the newspaper cuttings and archive oral history documents. What did passengers say about tram services? What did the conductresses say about passengers?
- What issues have been raised by passengers and tram conductresses?
- Look at the newspaper report describing the strike. What is the position of women? Why are they striking?
- What attitudes were expressed towards women in the War Cabinet Committee Statement. Why do you think this was?



6.5 Activity Descriptions

2. Crime and Punishment Learning Centre

Punishment Record Book

This activity explores the codes of practice for working on trams and how employees were treated by companies. Tram workers needed to be disciplined to ensure they worked to company rules including good conduct, reporting lost items, collecting appropriate fares with correct currency and adhering to driving and working time regulations.

In this activity students find out about some of the tram employees misdemeanours and the punishment given. They are invited to debate whether they think the punishments given are fair. Students also see a glimpse of people's lives outside of work.



Crime: The Tottenham Outrage Activity

The Tottenham Outrage occurred on 23 January 1909 when two armed criminals attacked and stole money from two employees of a factory who were delivering £80 of weekly workers wages. Nearby at the local police station shots were heard, policemen investigated and gave chase. During the chase two offenders known by the names Jacob Lapidus and Paul Hefeld boarded a tram, the driver escaped to the upper deck and all but one of the passengers also escaped. The conductor could not get away and was forced to drive the tram at gunpoint. The pursuing officers boarded another tram and a chase occurred.

Ask students to find a tram similar to the one hijacked by the criminals. Using notes and the book by JD Harris describing the incident, students could piece together the story and consider how the community, the police and criminals responded. What forms of transport were used during this event? How did civilians and the police respond? What does this story tell us about law, order and regulation at the beginning of the century? What changes or debates may have occurred as a result of events of like these? What lasting legacy was created as a result of the policeman's actions? How reliable are the sources as historical evidence? What is the social and political background of the offenders?

Resources

Outrage, An Edwardian Tragedy by J.D.Harris

L.U.T Punishment Record Book

Tram Employees Rules and Regulations

6.6 Activity Descriptions

3. Working and Living in the Past Crich Tramway Village Street Scene

Activity

Students are provided with images of Crich Tramway Village and images from the archives. Students are asked to explore similarities and differences during different periods e.g. Victorian and Edwardian

Student Questions

What is the same? What is missing? How convincing is the street scene at Crich Tramway Village? Can you suggest a period in time that it is maybe similar to? What would the streets have looked, sounded, smelt like during the early and later age of trams? What changes and developments would passengers have seen? Who travelled on the trams? Who would have used workers trams?

Images

Market Street 1902
Postcard of a High Street
Jamaica Street
Railway Station, Horton Street, 1938 by W A Camwell

Resources

Student Street Activity Sheet

4. Industrialisation and Transport Stephenson Discovery Centre

Activity

This activity has been developed in response to the interactive discovery exhibition on the first floor of the George Stephenson Discovery Centre (above the education room). Students can work through a trail to develop a deeper understanding of life during Victorian and Edwardian times and how and why transport and technology developed.

Resources

Student Discovery Trail Activity Sheet

5. Historical Events Political, Social, Technological Change 1860 - 1960 Great Exhibition

Activity

This activity takes place in the Great Exhibition Hall. Students are invited to create a timeline of events from 1860s to 1960s using the objects and information banners.

Resources

Student Timeline Activity Sheet
Information Panels
Historical objects, Trams

6. The Burton Tram Crash Classroom Activity

Lillian Parker was named a Heroine when she attempted to stop an out of control tram speeding down a hill in Burton. In her attempt to save lives, she lost her own. Using newspaper articles, poems and audio material students can piece together the story. Students could think about when the sources were written, the viewpoints expressed, differing interpretations and emotions conveyed.

Resources

Newspaper Article South Derbyshire Jottings
The Heroine of Newhall Poem
Audio Recording

7. Drama Activities



Aim

To use the Crich Tramway Village site and its collections as inspiration for dramatic improvisation. Activities are designed for students studying English, PSHE or Drama.

Objectives

- To develop improvisations using historical settings and collections as inspiration
- To use voice, movement, gesture and facial expression to develop character
- To work collaboratively and creatively to devise unscripted pieces that maintain the attention of audiences
- To select and synthesize relevant ideas and skills to create dramatic pieces
- To evaluate their own and others performances

Key Themes

- Improvisation, character, context and plot
- Audience and performance space
- Social and historical Influences, interpretations of the past
- Location, relevance, meaning
- Genre and convention

Key Questions

- What do you see, notice, feel and observe when you travel on public transport? What conversations may occur on trams now and in the past?
- What drama techniques would you use to describe historical events?
- What characters so you think are portrayed in these documents?

Curriculum /Exam Specification Links

- Portray character, directly and indirectly, through description, dialogue, action and performance
- Recount a story, anecdote or experience, and how this differs from written narrative.
- Work in role to create characters, interpret with creativity and originality using clarity, fluency and control
- Develop improvisation skills in a range of drama contexts
- Recall, select and communicate knowledge and understanding to generate, explore and develop ideas through process to performance
- Consider and explore the impact of social, historical and cultural influences on drama texts and activities
- Reflect on and evaluate their own work and the work of others

Classroom activities

- In small groups discuss how different forms of stimuli can be used as the starting point for improvisation. Each group could discuss a different item e.g. object, oral history, film. What are the benefits and considerations for each item?
- Watch the films of Mitchell and Kenyon. Ask the students to focus on different individuals within the films. How would they have spoken? What happened to them immediately before or after the filming? How could you recreate the atmosphere of the Edwardian era?

7.1 Summary of Drama Activities

Theme	Key Questions	Activity
The Suitcase	<p>Who owned the case? What was it used for? How was it used? Was it linked to a significant event in history?</p> <p>What characters may have worked on the trams?</p> <p>What daily events, discussions, would have taken place?</p>	<p>Students work in groups to tell the story of an object selected from the case</p> <p>Students form a character from the objects and photographs. Use hot seating techniques to portray character</p> <p>Tell the story of women at work from different perspectives</p>
In Conversation	<p>Ask students to consider an everyday conversation between a group of people e.g. the weather, the price of food etc. How might the conversation change depending on the location? Does the physical environment impact upon the atmosphere or the dialogue?</p>	<p>Move around the site to practice improvisations in different locations.</p> <p>Use images in the image pack to recreate</p>
Heroes and Heroines	<p>What were the events of the Tottenham Outrage? Identify key characters. How do you think people reacted? How could different events have changed what happened?</p>	<p>Use thought tracking techniques to create inner monologues</p> <p>Highlight key points in the narrative using the appropriate technique</p> <p>Consider alternative endings</p>
Accused	<p>What accounts are given in the Punishment Record Book?</p> <p>What glimpse of characters do you get from these accounts?</p> <p>Were employees fairly treated?</p>	<p>Expression and Voice: A student takes on the role of the perpetrator and is questioned about their motives and intentions by the rest of the group.</p>
The Journey	<p>What can we tell about people we see, meet, speak to on public transport?</p> <p>What conversations might to hear or be involved in on a tram?</p>	<p>Develop a conversation between two characters travelling on a tram. Act them out on a tram journey</p>

7.2 Activity Descriptions

The onsite activities described below suggest how the Tramway site can be used as inspiration for improvisation.

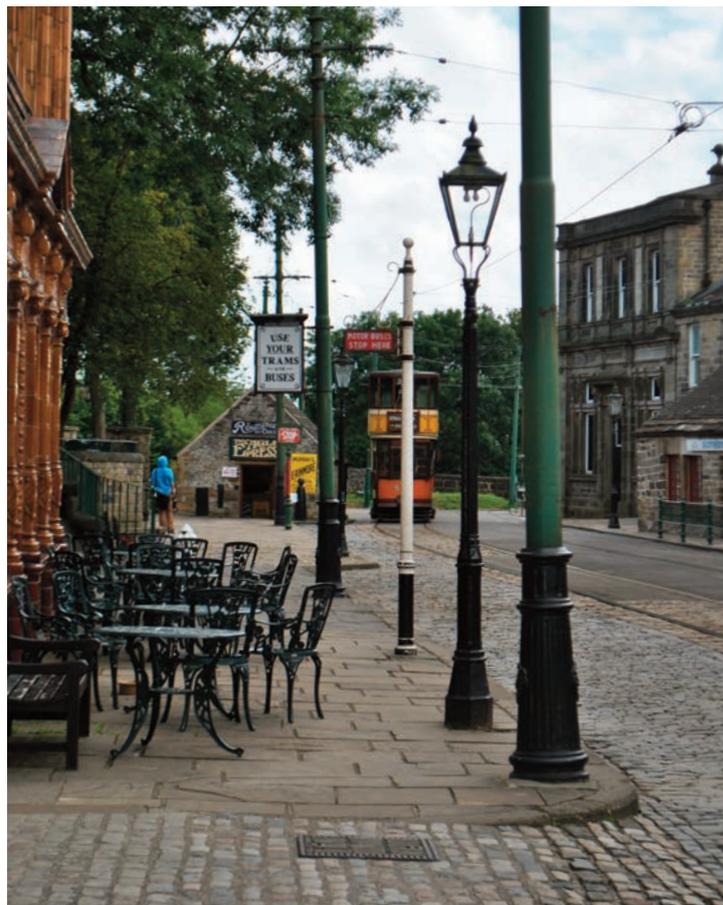
1. The Suitcase

The objects and documents contained within the resource box tell the story of women and work during World War One. The contents of the resource can be used in multiple ways to stimulate creative improvisation, below are a few suggestions:

Take time to explore the contents of the resource box. What links can the students make between the different stimuli. Split the students into small groups and select one object from the resource box for each group. Ask them to tell the story of this object responding to key questions e.g. Who owned it? What was it used for? How was it used? Was it linked to a significant event in history?

Use the photographs, documents and objects in the suitcase to build a picture of a character. Working in small groups the students should use 'Hot-seating', with one student at a time playing the role of the character and responding to questions from the group. Taking the photographs from the resource box ask the students to develop a character through exploration of facial expressions and gesture alone.

Use the newspaper cuttings to build a picture of what it was like for female tram drivers and conductors during world war one. Taking the role of a narrator, ask the students to tell the story of women at work from different perspectives.



2. In Conversation

The Image Pack has been developed to stimulate discussion around the similarities and differences between today and the past. The images feature different locations around Crich Tramway Village.

Ask students to consider an everyday conversation amongst a group of people e.g. the weather, the price of food etc. How might the conversation change depending on the location? Does the physical environment impact upon the atmosphere or the dialogue? Move around the site to practice improvisations in different locations.

Use the images to create freeze frames, for example, imagine a view out of the window from a tram, at a tram stop, outside a shop. Working in small groups the students should consider what might be happening in each location. How many characters would be there? How do the characters relate to each other? What is happening in the still image? How can they convey this dramatic situation to an audience? Move around the site to capture frozen images in situ. Review each groups performance by discussing what the students think is happening in each frozen 'image'.



7.3 Activity Descriptions

3. Heroes and Heroines

Telling the story of two eventful moments in the history of trams, The Burton Ashby Tram Accident and the Tottenham Outrage stories create an opportunity for students to explore characterisation and the sequencing of narratives.

Monologues

The students select one character from the Tottenham Outrage or Burton Tram Crash stories and use thought tracking techniques to reveal their inner monologues at key moments in the narrative.

Narrative

Recreating a scene from one of the historic events the students should 'mark the moment', highlighting key points in the narrative using an appropriate dramatic technique. Working in small groups the students could be allocated different techniques e.g. thought-track, freeze frame and narration. The activity could be concluded with the whole group reviewing the success of each technique.

Endings

After using the documents to develop an understanding of the historic events ask the students to consider how alternative scenes or endings might significantly change the narrative. Might there be an additional conversation between two characters that would change the audience's perspective? Or did something happen afterwards that impacted on the final outcome?

4. Accused

Consider the management of employees during the early 20th century. This activity will challenge the students to make informed decisions and resolve dilemmas.

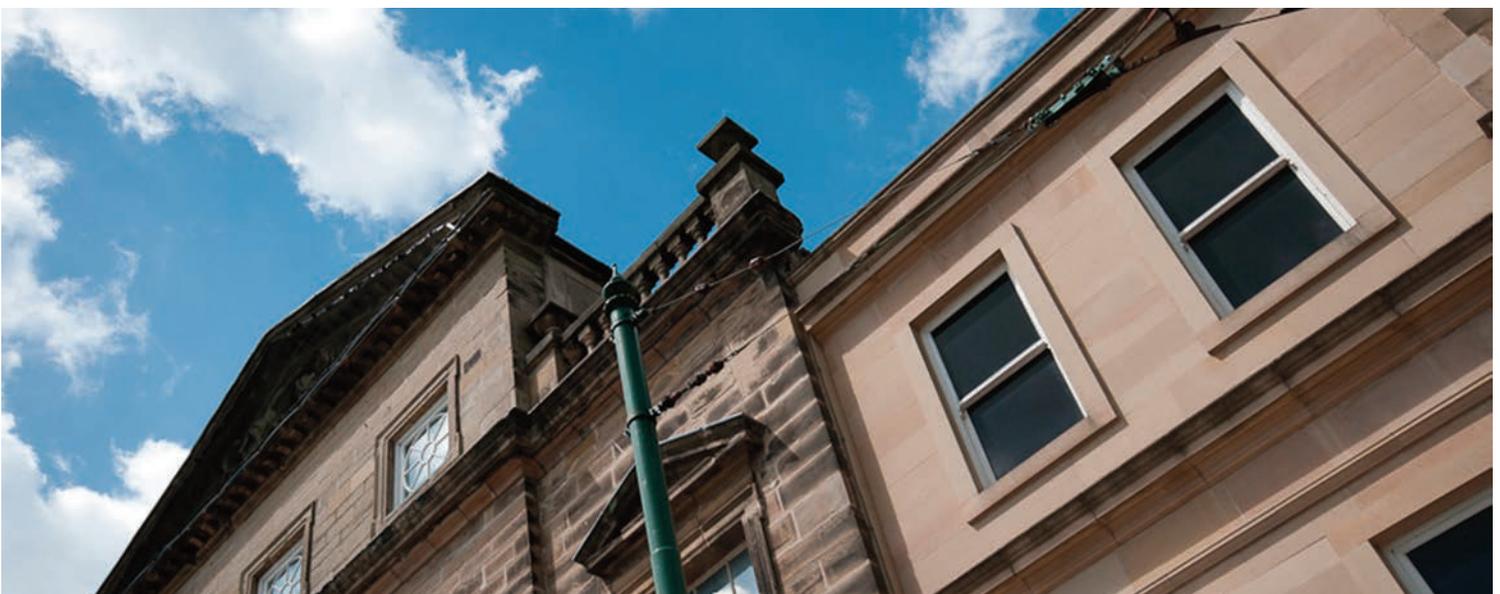
The students select one account from the Punishment Record Book and develop a picture of the characters involved. One student should take on the role of the perpetrator and be questioned about their motives and intentions by the rest of the group. Ask the students to concentrate on their use of expression and voice.

Taking one account, students recreate the scene where the incident place. Using a 'Forum Theatre' technique ask the students to stop the action at a key moment and change the narrative so there is a different outcome.

The Journey

The atmospheric journey on one of Crich Tramway's historic trams can be used to inspire improvised conversations.

Working in pairs, ask the students to develop a conversation between two characters travelling on a tram. They should consider how they can convey that character and the relationship between characters to an audience in a short scene. The length of the improvisation will be limited by the time of the journey. Different scenarios should be given to each pair and the return tram journey could be used to film selected conversations.



8. Art and Design



Aim

To use the Crich Tramway site and its collections to inspire students to create original artwork in a range of media whilst developing practical skills. Students will develop, refine, record and present ideas that meet assessment objectives for the Key Stage 3 and 4 programme of study and exam specifications.

Objectives

- To experiment with ideas, materials and techniques to communicate ideas and meanings
- To respond creatively to the physical environment and museum collections, working in traditional and new media
- To develop confidence through taking risks and making informed choices
- To reflect and evaluate their own work and others' work
- To work independently and collaboratively
- To make links between art and design and other subjects

Key Themes

- Journeys
- Man and Machine
- Scale and Pattern
- Natural and Man-made

Key Questions

- Is public art important? How can public art enhance a landscape?
- Consider types of journey e.g. metaphorical, physical, historical, emotional?
- How has man and machine been reflected in art history? How has the impact of industrialization and society been portrayed?
- What patterns can you find in the natural and man-made environment? How has pattern and scale been used by contemporary and historical artists to comment on an understanding of the society and world we live in?

Curriculum /Exam Specification Links

- Demonstrate creativity, competence and critical understanding
- Explore, create, understand and evaluate
- Fine Art: painting, drawing, sculpture and alternative media
- Three-Dimensional Design: architectural and environmental design
- Photography (Lens and Light-based Media): film-based photography, digital photography, moving images, film animation and new media
- Graphic Communication: advertising, illustration, typography and interactive media
- Analytical and cultural understanding, experimentation, development, recording ideas, observations and personal response.

8.1 Summary of Art Activities

Theme	Key Questions	Activity
Public Art Man and Machine Natural and Man Made	Why is public art important? How might it impact on people and the physical surroundings?	Design a public / sitespecific sculpture that responds to its unique location and will engage visitors to Crich Tramway Village
Photography Journeys, Scale and Pattern	Reflect on images of Tramway Village What patterns are you inspired by in the outdoor, indoor environment? What patterns have been created onsite, on trams and objects?	On the theme of journeys create your own photographic images Respond to an exhibition brief and create photographic artwork inspired by the site and collections on the theme of scale and pattern
Animation Journeys	How can the theme of journeys be portrayed through an animation? What techniques will you use? How can the theme journeys be interpreted? Journey through time, movement, history etc	Students plan/create a short animation on the theme of 'Journeys' (maximum 2 minutes) e.g flipbook animation or a stop frame animation. Their choice will dictate the reference material they need to gather during their site visit.
Marketing Man and Machine	Who is the target audience? Will this influence their approach? Where will the posters be displayed, on street furniture, websites or social media? How will their campaign message be best communicated to their target audience?	Students create a marketing campaign that would encourage people to use trams today, linked to the theme of "Man and Machine".

8.2 Activity Descriptions



In this section a number of different projects have been suggested to show how Crich Tramway Village can be used to fulfill the teaching and learning objectives of the Art and Design curriculum. Each project includes classroom and onsite activities, based upon different suggested themes. All of the activities are flexible and can be adapted to meet the specific teaching and learning needs of each visiting group.

Project 1: **Create a site-specific public sculpture** **Man and Machine, Natural and Man-made**

Classroom activities

- Introduce the group to the term 'public art' and show examples in both urban and rural settings. Anthony Gormley is one artist who could be used to illustrate how one sculptural style has been adapted to varied physical environments.
- Discuss as a group the similarities and differences between site-specific art and public art.
- Ask the students to describe why public art is important, how it might impact on its physical surroundings and how people feel. What qualities should it possess?
Collate all of the responses in a spider diagram.

Site-based activities

- Students could work individually or in small groups. Ask the students to select one of two locations at the museum, for example, The Woodland Walk or the Old Derby Assembly Rooms Façade. Each student will design a public / site-specific sculpture that responds to its unique location and will engage visitors to Crich Tramway Village. They should think about scale, material, form, audience and message.
- Working in their sketchbooks, students could explore the site and its collections taking inspiration from the forms and materials they see around them. The students who have decided to work in The Woodland Walk could concentrate on the theme of 'Natural and Man-made', whilst the students who have selected the Old Derby Assembly Rooms location could focus on 'Man and Machine'. Students could gather a variety of reference material, including making sketches and taking photographs of their chosen location, so that they can develop their final designs back in the classroom. At the end of the visit students share their design ideas with the rest of the group.

8.3 Activity Descriptions

Project 2: Respond to a photographic brief

Journeys, Scale and Pattern

Classroom activities

- As a group discuss the differences between working on a commercial brief and a personal project. How might the process and resulting images differ? Ask the students to draw a spider diagram that identifies all the important qualities in a good marketing image.
- Look at Crich Tramway Village website and discuss the photographic images featured. How successful are they in communicating the atmosphere of the site? Do they encourage the group to visit? How could they be improved?

Site-based activities

Ask the students to select one of two options:

- Take a series of five images that could be used online or in printed marketing materials by Crich Tramway Village to publicise the site to families who have never previously visited. The museum wishes to promote the site as fun, family-friendly and good value for money. All of the images should be connected to the theme of 'Journeys'.
- The museum is hosting a photographic exhibition on the theme of 'Scale and Pattern' and would like to invite submissions from young photographic artists. Each artist should submit a series of five images that strongly expresses the selected theme. The artwork should be inspired by the museum and its collections. The artists should give specific instructions for how the work will be displayed.

Students could explore the site by taking images that respond to their chosen brief and digitally manipulate the photographs in the classroom. Students could then select their most successful five images and talk the rest of the group about their work and reasons for selection.

Project 3: Create an Animation

Journeys

Classroom activities

- Look at examples of flip-book and stop frame animations.
- Discuss the process of planning an animation, including developing a narrative and storyboarding.
- Discuss how the students could use Crich Tramway Village as inspiration for a short animation about 'Journeys'. What information / reference material could they gather during a site visit?

Site-based activities

Students could work individually or in small groups for this activity. Ask the students to plan a short animation on the theme of 'Journeys' (maximum 2 minutes). They could choose to create a flipbook animation or a stop frame animation. Their choice will dictate the reference material they need to gather during their site visit. The students should consider the tone and pacing of their animations. Will they create a simple animation showing the journey of a tram, or will they tell a more dramatic or comic story?

There are a number of resources available onsite to help students develop a concept for their animation including:

- A Tram Journey from the centre of the Tramway Village to the top of the site.
- The Suitcase, objects and items referencing women in World War One
- Heroes and Heroines, description of a dramatic Burton Tram accident
- Oral history extracts, from conductresses working in the first half of twentieth century

Time should be allowed for the students to plan their animations using storyboarding techniques. Students should explore the site, making sketches, taking photographs or films and audio which can be used in their animations.

Back in the classroom students could be given the opportunity to collate all of the media gathered during their site visit to complete their short animation.

8.4 Activity Descriptions

Project 4: Design a Marketing Campaign Man and Machine

Classroom activities

Look online for examples of posters promoting the use of trams in the past. (The London Transport Museum has a number of good examples in their collection.) Discuss the purpose of these historic posters and if there are any modern comparisons.

Introduce students to the new tram schemes in British cities including Manchester, Sheffield, Nottingham and Edinburgh. Discuss the benefits and challenges of these new transport systems? Show students some of the anti-tram campaigns: e.g. <http://www.edinburghtramfacts.com/>. Discuss how a marketing campaign could be created to change public perceptions of the trams.



Site-based activities

Ask students to create a marketing campaign that would encourage people to use trams today. This activity could be inspired by the 'Survive and Thrive, The Electric Era' Exhibition located onsite in the Derby Assembly Rooms. They can decide whether to use print (i.e. posters) or multi-media (i.e. a short promotional film). All of the campaigns should be linked to the theme of "Man and Machine".

Initially students should consider the core message of their campaigns. Who is the target audience? Will this influence their approach? Students then use their time at the site to gather useful reference material for their marketing campaign e.g. photographs, films, sketches, audio recordings etc. Students should consider where their campaigns will be displayed. Will they use street furniture, websites or social media, television or public transport e.g. graphics on the side of trams. How will their campaign message be best communicated to their target audience? The style of their campaign should be considered carefully. Will they use illustration and the historic examples of tram posters as reference? Or take a more modern approach using film and photography?

Back in the classroom students could be given the opportunity to collate all of their reference material and complete their marketing campaigns. Students should share their completed work with the group, discussing the successes and areas for development in each campaign.



9. Geography Activities

Aims

To use the Crich Tramway Site to develop an interest and sense of wonder about the site and its surrounding landscape including how places and landscapes are formed, how people and their environment interact and how societies and environments are interconnected.

Objectives

- To understand the geological landscape in Derbyshire
- To know and why the rock is quarried and the minerals extracted
- To understand the relationship between industry, economics and the environment

Key Themes

- Rock Landscapes
- Economic Change
- Tourism
- Rural Environments

Key Questions

- What is our understanding the physical and human characteristics of real places?
- How are the interactions between places and the networks created by flows of information, people and goods?
- How can we better understand scale: from personal and local to national, international and global?
- What interdependences can be identified by exploring the social, economic, environmental and political connections between places?
- How do sequences of events and activities in the physical and human worlds lead to change in places, landscapes and societies?

Programme of Study / Exam Specification Physical and Human Geography

- Rock landscapes and processes, resources and scenery
- Geological time and the position of different rocks, characteristics and formation
- Features of the landscape and landforms influenced by the type of rock, surface and underground features, why the rock is extracted, uses, costs and benefits
- Economic change, the characteristics of industry, industry and industrial change in MEDCs
- Tourism, trends, attractions for tourists, tourism in the UK
- Rural environments, characteristics of rural environments, changes in rural areas, MEDCs
- Local Fieldwork Investigation
- Skills: questioning, investigation, critical thinking, reading and using maps, using new technologies (e.g. GIS)

Classroom Activities

Research the museum site and surrounding landscape using ordnance survey maps and GIS to look at satellite images. Ask the students to list the features of the landscape.

Questions:

- How does the limestone rock affect the landscape, what are the visible signs?
- When and how did the limestone rocks form?
- What are the environmental impacts of quarrying?
- How has the industrial past shaped the landscape?
- What are the uses of limestone?
- How and why are minerals extracted from the rock?



9.1 Background Information

The Tramway Site and Geography

Crich is a village located on the outskirts of the Peak District National Park, ten miles north east of the City of Derby. It has a population of 2821 and falls within the Borough of Amber Valley. It's name is taken from a very old celtic word meaning 'crag' or 'hill', representing the way that the village rises in a lump of limestone rock (anticline). Geologically, Crich lies on a small inlier of Carboniferous limestone (an outcrop on the edge of the Peak District surrounded by younger upper Carboniferous rocks).

It is believed quarrying for limestone began in Roman times. At Crich limestone has been quarried for hundreds of years, to be used as stone to build walls and for lime to spread on fields. Lime is also an important part of the iron making process and became vital to the Industrial Revolution. There was massive demand for lime from big new iron making companies in Derbyshire such as Stanton Iron Works, the Butterley Company and The Clay Cross Company (originally George Stephenson Co).

In 1791 Benjamin Outram and Samuel Beresford bought land for a quarry to supply limestone to their new ironworks at Butterley. This became known as Hilt's Quarry, and the stone was transported down a steep wagonway to the Cromford Canal at Bullbridge.

George Stephenson is known throughout the world as the 'Father of Railways'. He had many business interests in Derbyshire including the quarry at Crich. In 1840, whilst building the North Midland Railway, he discovered deposits of coal at Clay Cross and formed what later became the Clay Cross Company. He realised that burning lime would provide a use for the coal slack that would otherwise go to waste. He leased Cliff Quarry, Crich and built lime kilns at Ambergate. They were connected by a wagonway including a section known as 'The Steep'.

The railway from Cliff Quarry to the kilns at Ambergate carried a total of six million tons of stone over its lifetime. The lime was transported around the country via the new railway system that Stephenson had helped to build. Crich lime was sought after, being very pure at 96% lime with no traces of impurities such as arsenic and phosphorus.

Cliff Quarry closed in 1957, and was first leased and then bought by the Tramway Museum in 1959. The adjacent Crich Quarry still remains where a small amount of limestone extraction still occurs in the western end.

Useful references

Text panels in the George Stephenson Discovery Centre, Crich Tramway Village

Crich village website: <http://www.crichweb.com/site/>

Wikipedia: <http://en.wikipedia.org/wiki/Crich>

Peak District National Park Fact Sheets
www.peakdistrict.gov.uk/learning-about/factsheets

Crich Heritage Partnerships:
www.crich-heritage.org.uk

The word 'tram' comes from a word to describe 'wood' not from a man named Outram as suggested in this article.

Fact Sheet 4: Quarrying and mineral extraction in the Peak District National Park

Fact Sheet 6: Rocks and minerals of the Peak District National Park



9.2 Activity Descriptions

Theme	Key Questions	Activity
<p>Rock landscapes and processes</p>	<p>What is the classification of limestone rocks?</p> <p>How has quarrying shaped the landscape?</p> <p>What are the economic, social and environmental advantages and disadvantages of quarrying?</p> <p>How is extraction managed?</p> <p>How can the impacts of quarrying be reduced?</p>	<p>Use the Quarry as an example of primary industry.</p> <p>Draw a geological timeline</p> <p>Discuss the changes in the landscape and environmental conditions from the Carboniferous Period to today.</p> <p>Ask the students to debate the issue of quarrying, constructing arguments for and against its continuation in this location.</p> <p>Combine a visit to Crich Tramway Village with the Peak District Mining Museum, Matlock Bath, or the National Stone Centre, Wirksworth.</p>
<p>Tourism</p>	<p>What are the opportunities and challenges at this site?</p> <p>How are the interests and needs of different stakeholders balanced?</p> <p>How would you ensure sustainability at the site?</p> <p>What management strategies would you use?</p> <p>How important is tourism to the local area?</p> <p>How does it contribute to the local economy?</p>	<p>Leisure and Tourism Resource Pack (Museum led session)</p> <p>Create a poster / promotional film to advertise the Tramway Village to a particular audience.</p>
<p>Rural environments and economic change</p>	<p>What are the physical characteristics of this environment?</p> <p>How has this community benefited from local industry?</p> <p>How did the development of the railways and trams impact on the environment?</p> <p>How has the economic activity in this environment varied over time?</p>	<p>Use the site and its surrounding village to gather evidence of economic changes, students can use cameras to document their evidence.</p> <p>Interview visitors, staff and local residents to gather information about economic changes.</p>

10. Science: Physics



Aim

To use the Crich Tramway collection to develop a knowledge and understanding of energy, and forces at levels Key Stage 3 and 4.

Objectives

- To develop an understanding of circuits, forces, energy and motion
- To apply knowledge to understand the workings of trams
- To observe applications of scientific ideas and processes

Key Themes

- Energy
- Forces
- Electricity
- Materials
- Motion

Curriculum and Examination Specification Links

- Energy and efficiency, energy and heating processes
- Kinetic energy: different types of braking, resistive and regenerative braking
- Conduction and insulation, evaporation and condensation
- Circuits: parallel and series
- Forms of energy: transferred and stored
- Forces: resistance
- Kinetic theory

Resources

Crich Tramway Village has a collection of static and working trams from the 1860s to the 1960s. This resource links to GCSE physics science curriculums. The suggested activities provide a starting point for exploration of the scientific workings of collection and the site.

The resources available are:

- Crich Tramway Village Collection and Site
- Student Question Sheet
- Online Archive

10.1 Background Information

The following information is taken from text panels shown in the great exhibition hall:

Electric Trams

- Trams use a Direct Current of 500 volts. Speed is managed using a control handle and a resistance box that uses series and parallel circuits to slow down and speed up. The materials in the resistance box are typically zinc and steel.
- The motors on a tram work by changing electrical energy into rotary movement. Electricity is passed through a copper wire coil in a magnetic field and the magnetic force produces a turning force that turns the motor.
- The trolley poles are carefully designed so that they stay on the wire and move with the tram. Trolley poles are a sprung pole that pushes against the wire with grooved swivel wheel at the end to flexibly follow the movement of the tram.
- Pantographs are now used on modern trains and trams. They can carry a higher voltage.

Steam Trams

Steam Trams were invented in the late 19th century but were not that favoured by the general public. Steam trams were not allowed to emit smoke or steam due to an 1855 government act. To limit any steam and smoke, coke was used instead of coal, and water vapours were cooled in pipes and then turned into water again.

The steam tram was powered in the following way: water was heated by burning coke. The gas expanded enormously to create a greater pressure on the boiler and was forced out of the boiler into the cylinder. The pressurised steam propelled the pistons and drove the wheels. The up and down piston motion was changed into a rotation motion through the mechanical drive gear.

Suggested Activities

Suggested themes and activities are offered in the table on the next page to support student engagement in the scientific aspects of the collection.



10.1 Summary of Science Activities

Theme	Key Questions	Activity
Electricity Resistors and Circuits	<p>What is the difference between the electric voltage supply for domestic households and trams?</p> <p>How is speed controlled in the running of a tram?</p>	<p>Draw an electric circuit showing the power supply for a tram using correct symbols</p> <p>Explore the use of parallel and series circuits</p>
Materials Conduction and Insulation Energy transfer	<p>How is the electric current controlled to manage the speed of a tram?</p> <p>Which materials are effective conductors of electricity?</p>	<p>Identify materials used in the resistor box (Zinc and Steel)</p> <p>Why are these materials used?</p> <p>Identify materials and where/how they are used in a tram</p>
Energy Stored Energy Transferred Energy	<p>In what forms are energies stored and transferred in a working tram?</p> <p>Identify forms of stored and transferable energy in a moving tram</p> <p>How is evaporation and condensation used in a stream tram?</p> <p>When is a running tram at an energy efficient state?</p> <p>How energy efficient is a tram?</p> <p>Explore kinetic energy: braking and regenerative energy</p>	<p>Visit the Great Exhibition Hall, look at different types of tram (steam, electric, horse drawn)</p> <p>Create a diagrammatic representation of forms of stored and transferrable energy. Sankey and other visual representations depicting used and wasted energy</p> <p>Make a film about energy using the collection at Crich, the street, diagrams and models</p> <p>Investigate and evaluate the benefits of different types of braking systems on trams</p>
Heat Engines and Thermodynamics Compression and expansion	<p>Steam trams were not allowed to emit smoke or steam due to an 1855 government act. How were these problems solved?</p>	<p>Look at the diagram of the workings of a steam tram. How were they designed to be more energy efficient and to limit pollution?</p>
Forces Magnetic Friction	<p>How do the motors in a tram work?</p> <p>Why was sand used on the tram lines in certain conditions?</p>	<p>Resistance, momentum</p>